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PORT OF PORTLAND

May 21, 2002

Mr. Rodney Struck
Oregon Department of Environmental Quality
2020 SW 4th Avenue, Suite 400
Portland, Oregon 97201

Subject: Terminal 1 South
Revised Response to Review Comments on Human Health and Ecological Risk Assessment
ECSI File No. 2042

Dear Mr. Struck:

The Port of Portland (Port) has prepared the following revised response to the Oregon Department of Environmental Quality (DEQ) review comments on the Terminal 1 (T1) South Human Health and Ecological Risk Assessment, as documented in your letter dated February 12, 2002. Our comments have been revised based on a meeting with DEQ on April 29, 2002. The Port's revised response to DEQ's general and specific comments (in italics) are summarized below. In this letter, we are only providing comment responses that were revised based on the April 29 meeting. All other comment responses remain as presented in the original comment response letter dated March 5, 2002.

General Comments

A. It is important to note that the divisions for the risk assessment do not match the preliminary plans for the future development submitted to DEQ on November 12, 2001. The proposed site plans show many smaller lot divisions. For example, Area A is further divided in A1, A2, and A3, and B and C are similarly divided. It is important to adequately address potential hot spot areas (e.g., B-37, B-5 and B-29) that may have one building built over them, and evaluate these separately so exposure point concentrations are not diluted over a larger area. This becomes especially important when high concentrations in one isolated area are stated as not being representative of the larger data set, when in fact they may be representative of development and future use.

An overlay figure is needed showing future development and contaminant concentrations. In addition, once redevelopment plans are prepared areas that will be excavated (i.e., cut) and areas that will be filled should be identified. Further risk assessment or sampling may be required if soils not currently evaluated as surface soil are brought to the surface and distributed.

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Response: The Risk Assessment has considered the current and reasonably likely future land use at this site as is required under DEQ and EPA Guidance. These include a mix of residential and commercial uses. We have provided quantitative risk and hazard estimates for exposure to the following receptors; residents, commercial workers, and utility/excavation workers. The division of the site into Areas of Concern (AOCs) was clearly delineated in the Risk Assessment Work Plan, and the baseline risk assessment did not deviate from these AOCs. It is not feasible to run risk calculations (or conduct further risk assessments) for every possible permutation of building development that may occur at this property and this suggestion runs contrary to existing guidance. Also, it should be noted that soil contamination exceeding hot spot criteria has only been detected at the B-68 and B-92 sample locations, as will be documented in the feasibility study.

However, to address DEQ concerns regarding the protectiveness of the recommended remedial alternative (DEQ Comments on the Terminal 1 South Feasibility Study, May 3, 2002) the Port will conduct residual risk calculations for the 0 – 15' bgs depth prism for soils in Areas A and B combined, using the Central Tendency (CT) exposure assumptions for residential use. The Port believes that the CT scenario is appropriate for evaluating potential risks from subsurface soil redistribution, as this material will be mixed with other soil and landscaping material if it were ever brought to the surface. In addition, Riverscape intends to prepare a soil management plan for submittal to DEQ prior to site development. The use of the RME scenario to evaluate this condition would provide an unnecessarily conservative risk estimate. If this soil prism is determined to have acceptable human health risks under the CT scenario, it will be concluded that there would be no unacceptable risks to future residents, future excavation, commercial, and construction workers at this site.

Specific Comments

1. **Page 8, Section 2.4.1.** The locality of the facility should include Willamette River sediments if known contamination from the site has migrated or has the potential to migrate there. Data previously collected adjacent to the T-1 facility should be summarized in this report. If contaminants at the site are determined to have the potential to migrate to the Willamette River, this should be stated in the RA.

   Response: It is our conclusion that while groundwater has the potential to migrate to the Willamette River, the concentrations of compounds of interest (COIs) in groundwater are below conservative screening levels and are, therefore, below any levels of concern from a human health or aquatic perspective. There is no reason to believe that any unacceptable conditions could have resulted in the Willamette River based on the groundwater monitoring results. The Preliminary Assessment completed at this site also concluded, "there is a low potential for upland activities to have resulted in releases to the Willamette River via storm water discharges". There appears to be no transport mechanism present at this site that would result in unacceptable concentrations of COIs being transported to the Willamette River. Therefore, consistent with the "locality of the facility" defined in the DEQ approved RI, the Willamette River sediments remain outside the "locality of the facility" for this site. Sediments will be addressed in the Lower Willamette River Superfund Site project.

2. **Page 2.10. Section 2.6, COPCs.** PCBs are listed as COPCs in paragraph 2 of this section and are not mentioned again. Please add text regarding the elimination of PCBs as COPCs. They are not included in the screening process or data tables.

   Response: PCBs were identified as possible Contaminants of Interest (COIs) for this site. As defined by DEQ, COPCs are those COIs that exceed risk-based criteria and PCBs do not fit this definition at this site. PCBs were only detected in one soil sample that was collected at a depth of 67.5 bgs. PCBs were never detected in any of the soil samples evaluated as part of this risk assessment and were not identified as COPCs. Text will be added to the report documenting this fact.

3. **Page 13, Section 3.1. Potentially Exposed Populations.** DEQ requests that since the site is going to be redeveloped, that a construction worker scenario be included in the risk assessment to adequately assess site risk. This scenario should include an evaluation of soils down to at least 10 feet below ground surface. The following exposure factors should be used in this evaluation:
   - Exposure Frequency 250 days/year
   - Exposure Duration 1 year
   - Soil Ingestion Rate 330 mg/day
   - Inhalation Rate 20 cubic meters/day
   - Body Weight 70 kg
   - Lifetime 70 years

   Response: Based on a clarification of the exposure parameters DEQ recommends for the construction worker scenario, it was agreed that Hart Crowser will calculate risk estimates using this exposure scenario on the 0 – 15' bgs soil prism for all areas of Terminal 1 combined. This would be consistent with a one-year duration of the development project and the fact that the same crew would most likely be working on the different areas of the site. It should be noted that the reference provided by DEQ for the exposure parameters for the construction worker scenario recommends exposure factors that are different than the standard default assumptions recommended by DEQ for excavation workers in the Deterministic Risk Assessment Guidance (DEQ, 1988). DEQ's reference for the construction worker scenario; Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, Peer Review Draft, march 2001, OSWER 9355.4-24, recommends the following default parameters:

   - AF/skin-soil adherence factor (mg/cm^2-event) of 0.3
   - SA/skin surface exposed (cm^2) of 3,300

   While these parameters are less than the recommended parameters in DEQ Guidance for excavation workers, they are consistent with the EPA recommended method for default evaluation of construction worker risks and will be used for calculating construction worker risks for this HHRA.

4. **Page 15, Section 3.1.2, Area B.** The data from B-63 should be further discussed and the rationale for omitting it included in the Risk Assessment. Elevated detection limits alone are not adequate rationale for deleting data. Instead of omitting the data from B-63 because of high detection limits, this could suggest that additional sampling is needed. This point also corresponded with high TPH and diesel concentrations.

   Response: EPA's Risk Assessment Guidance for Superfund (RAGS) addresses the issue of elevated sample quantitation limits. In Chapter 5.3.2, RAGS states one can "exclude the samples from the quantitative risk assessment if they" (i.e., referring to elevated SQLs) "caused the calculated concentration (i.e., the concentration calculated according to guidance in Chapter 6) to exceed the maximum detected concentration for a particular data set." The 90% UCLs for all the PAH COPCs exceed their respective maximum detected concentration when the elevated SQLs of 67 mg/kg are retained in the data sets. Therefore, the exclusion of the elevated SQLs is consistent with EPA risk assessment guidance. Additionally, Sample B-63a in question was collected from a depth of 10.5 feet bgs. Soil in this area will be removed to a depth of 10 feet bgs that should remove much of the contamination present at this location.

5. **Page 29, Section 4.2.** DEQ requires response letters from the U.S. Fish and Wildlife Service (USFWS), the Oregon Department of Fish and Wildlife (ODFW), and the National Marine Fisheries Service (NMFS) in addition to the Oregon Natural Heritage Program. This is to avoid omitting protected species. Several species appear to be missing from the list. For example, the Bald Eagle is not included.

   Response: DEQ has approved Level 1 Scoping Ecological Risk Assessments previously using the Oregon Natural Heritage Database search outputs as a surrogate for contacting USFW, NMFS, and ODFW. This has been particularly true on sites that do not contain "sensitive environments" as defined by OAR Chapter 340, Division 122-045. The conclusion of the Level 1 Scoping ERA is that there is very limited habitat present at the site, and there is no potential for exposure to ecological receptors at the T1 South Site regardless of the presence or absence of additional threatened and endangered species. The site is almost entirely paved or covered with buildings and provides very limited habitat for ecological receptors. The Oregon Natural Heritage Program provided a list of 11 State and Federal threatened and endangered species, and neither sensitive environments nor evidence of these species were found at this site. The identification of additional threatened and endangered species would not change the conclusions of the Level 1 Scoping ERA. No additional ERA activities are proposed.

Terminal 1 South Feasibility Study – Selected DEQ Comment Response. The comments received by the Port on the Terminal 1 South Feasibility Study (DEQ Letter dated May 3, 2002) brought up an issue that we believe is more appropriately addressed in the risk assessment. DEQ requests that the potential ecological and human health risks (i.e., via fish consumption) associated with groundwater discharging to surface water be addressed. The evaluation of potential ecological risks was addressed in the modified Level 2 Screening of the groundwater monitoring well data against the new DEQ Aquatic Ecological Screening Levels in Section 4.4 and Table 12 of the Terminal 1 South Human Health and Ecological Baseline Risk Assessment (January 18, 2002). While the original evaluation only included data from the first round of groundwater monitoring that has occurred at the site, we will include the data from the second round of monitoring

conducted in January 2002 in the risk assessment addendum. The conclusions of the modified Level 2 Screening of the new groundwater data were consistent with the initial results and indicates that the concentrations of compounds of interest in groundwater are below conservative screening levels and below any levels of concern from the aquatic perspective.

To address the potential human health impacts from groundwater discharges into the Willamette River and subsequent fish ingestion by recreational anglers, the available groundwater monitoring data were screened against existing Surface Water Criteria developed for the protection of human health from the ingestion of fish tissue. The existing groundwater data from the two completed rounds of monitoring and the DEQ and EPA screening levels are attached in the accompanying table to this memorandum

- The existing data were compared against two sets of available Surface Water Quality Criteria based on the protection of human health from the consumption of fish tissue: DEQ Table 20 values that were developed in 1992 and the EPA recommended National Ambient Water Quality Criteria (AWQC) dated April 1999. Both sets of criteria were evaluated, as the criteria for the primary contaminants of concern found in groundwater at the T1 South site (PAHs and arsenic) are significantly different for the Table 20 values versus the more recent EPA recommended AWQC.

- All VOCs (including chloroform) were either not detected or were detected at concentrations below DEQ's Surface Water Criteria for Fish Consumption (Table 20) in all groundwater samples.

- Non-carcinogenic PAHs were either not detected or detected at concentrations below both DEQ's Surface Water Criteria for Fish Consumption (Table 20) and EPA's National Recommended AWQC for Fish Consumption in all groundwater samples.

- For carcinogenic PAHs, DEQ Table 20 does not provide criteria for individual PAHs but a total PAH criteria of 31.1 ng/L. The more recent EPA Recommended Freshwater AWQC for Fish Consumption, which was updated based on toxicity factors present in the EPA IRIS database in 1998, provides criteria for individual PAHs and is also based on a carcinogenic risk standard of 1×10^{-6}, is equivalent to DEQ's individual carcinogen risk standard. We believe the EPA AWQC are more appropriate for use for screening of potential human health risks from fish consumption as it benefits from more recent toxicity information.

- No carcinogenic PAHs were detected in any of the groundwater monitoring wells. However, the detection limits achieved for these samples were above the EPA AWQC for fish consumption. At the present time, there is no reason to believe that carcinogenic PAHs are present in groundwater at this site. Generally, in risk assessments, a proxy concentration of one half the detection limit is often used to represent contaminant concentrations in situations where the contaminant has been detected in at least one sample. While such an analysis is quite conservative in this situation as carcinogenic PAHs were not detected in any of the groundwater samples, the proxy concentration thus generated is generally 0.050 µg/L, essentially equal to the EPA AWQC of 0.049 µg/L. Therefore, levels of carcinogenic PAHs are not present above levels of concern at the T1 South site.

- The total and dissolved levels of arsenic found in the groundwater samples exceed both DEQ and National EPA Recommended criteria, as well as the regional Willamette River watershed background level of 2.0 µg/L. However, for the Ross Island Risk Assessments, Hart Crowser worked with DEQ to establish an alternative Surface Water Criterion for Fish Tissue Consumption of 20.5 µg/L based on the EPA Region 6 Interim Strategy: Arsenic – Freshwater Human Health Criterion for Fish Consumption. This value was accepted by DEQ and all of the groundwater arsenic data (both dissolved and total) collected at the T-1 South site are below this alternative criterion. The EPA Region 6 Interim Strategy: Arsenic is provided as an Attachment to this letter and will also be included in the addendum to the Baseline Risk Assessment Report.

The conclusions of the human health fish consumption exposure scenario evaluation is that the concentrations of COIs in groundwater are below conservative screening levels and are, therefore, below any levels of concern from a human health perspective. There appears to be no transport mechanism present at this site that would result in unacceptable concentrations of COIs being transported to the Willamette River.

Please contact me at (503) 944-7533 with any questions. Your prompt attention is appreciated.

Sincerely,

Joe Mollusky

Joe Mollusky
Environmental Project Manager
Properties and Development Services

Attachments

cc: Bill Bach, Port (w/o attachments)
Jeff Bachrach, Ramis Crew Corrigan & Bachrach (w/o attachments)
Herb Clough, Hart Crowser (w/o attachments)
John Edwards, Anchor Environmental (w/o attachments)
Taku Fuji, Hart Crowser (w/o attachments)
Nancy Murray, Port (w/o attachments)
Tim Ralston, Ralston Investments (w/o attachments)